**UNITED STATES DISTRICT COURT**
**EASTERN DISTRICT OF MISSOURI**
**EASTERN DIVISION**

| | |
|---|---|
| UNITED STATES OF AMERICA,<br><br>Plaintiff,<br><br>v.<br><br>AMEREN MISSOURI,<br><br>Defendant. | Civil Action No. 4:11-cv-00077-RWS |

**EXHIBIT 1 TO**

**THE UNITED STATES OF AMERICA'S MEMORANDUM IN SUPPORT OF MOTION TO EXTEND THE DEADLINE FOR ANY NECESSARY DEPOSITION OF MR. JEFFREY HOLMSTEAD**

**UNITED STATES DISTRICT COURT**
**EASTERN DISTRICT OF MISSOURI**
**EASTERN DIVISION**

| | |
|---|---|
| United States of America,<br>Plaintiff,<br>v.<br>Ameren Missouri,<br>Defendant. | Civil Action No. 4:11-cv-00077-RWS |

# EXPERT REPORT OF JEFFREY R. HOLMSTEAD

Jeffrey R. Holmstead

May 16, 2014

**STATEMENT OF COMPLIANCE WITH THE FEDERAL RULES OF CIVIL PROCEDURE**

The following is a list of items provided in my report as required by the Federal Rules of Civil Procedure:

- This report contains my opinions and conclusions, as well as the bases and reasons for those opinions and conclusions.
- Exhibit A lists the documents that I considered in forming my opinions.
- Exhibit B contains a statement of my qualifications. I have not authored any publications in the last 10 years. I have never testified at trial before a judicial court or by deposition, but I have included a list of testimony I have given before various Committees and Subcommittees of the U.S. Congress.
- There are no exhibits supporting my opinions included in this report.
- Bracewell & Giuliani, LLP is being compensated for my work on this matter at a billing rate of $ 875.00 per hour.

## I. Background and Experience

My name is Jeffrey R. Holmstead, and since 1989 I have spent most of my professional career working on issues related to the federal Clean Air Act (CAA). From 2001 to 2005, I worked at the U.S. Environmental Protection Agency (EPA) as the Assistant Administrator for Air and Radiation. In this capacity, I was the senior official in charge of implementing all the regulatory and permitting programs of the CAA. I believe that I served in this position longer than anyone else in EPA history. During my tenure at EPA, I oversaw and was intimately involved in developing a number of CAA regulations, including some of the regulations at issue in this case.

I consider myself an expert on the CAA, the process by which CAA regulations are developed and implemented, and the roles played by EPA and state environmental agencies under the CAA. I have testified numerous times before various Committees and Subcommittees of the U.S. Congress on various issues related to the CAA.

I began working on CAA issues in 1989, when I joined the White House Staff of President George H.W. Bush. In the campaign leading up to the 1988 election, then Vice-President Bush had promised to push through new legislation to modernize the CAA, which had essentially remained unchanged since 1977. As a result of this campaign promise, the White House staff was very involved in the discussions that ultimately led to passage of the 1990 Amendments to the CAA, which created the current version of the CAA. I was somewhat involved in those discussions but became much more involved in efforts to implement the new 1990 CAA Amendments. From 1990 to early 1993, I was one of two White House staffers assigned to work with EPA on various CAA regulations. One important CAA regulation developed during that time is known as the WEPCO Rule, which is also relevant to this case.

During the period between my service at the White House and my appointment at EPA, I was a partner in the Environmental Group at the law firm of Latham & Watkins in Washington, DC. From 1987 to 1988, I served as a law clerk to Judge Douglas H. Ginsburg on the U.S. Court of Appeals for the District of Columbia. I received my J.D. from Yale Law School in 1987and my B.A. in Economics, *summa cum laude*, from Brigham Young University in 1984. Since 2006, I have been a partner at the law firm of Bracewell & Giuliani LLP, where I head the firm's Environmental Strategies Group.

## II. Summary of Report

The U.S. Department of Justice (Plaintiff) and EPA have alleged that Ameren Missouri violated the CAA when it performed repairs and replaced certain components of the Rush Island power plant in 2007 and in 2010 without first obtaining a New Source Review (NSR) permit. On December 20, 2013, Plaintiff's experts filed reports purporting to show that Ameren should have expected certain replacement projects to cause increased emissions of sulfur dioxide (SO2) in excess of a regulatory threshold set forth under the NSR program.

For this proceeding, I have been asked to provide opinions and a report, based on my experience as a former EPA official in charge of implementing the Clean Air Act, that addresses the following:

1. The role the NSR program plays in regulating SO2 emissions from existing coal-fired power plants such as the Rush Island Plant.

2. The role that a number of other Clean Air Act Programs play in regulating SO2 emissions from existing coal-fired power plants and the reduction in SO2 emissions at Rush Island that has occurred under these programs.

3. The respective roles played by EPA and individual states under the Clean Air Act and, more specifically, in implementing the NSR program.

4. The regulatory development process that led to the NSR regulations at issue in this case and the role of EPA's enforcement officials in that process.

5. Whether the methodology used by Plaintiff's experts to project future emissions was considered or could have been considered during the regulatory development process. I was also asked to offer my opinion on this methodology based on the applicable NSR regulations and approaches that have been used to calculate or project SO2 emissions in other regulatory and permitting programs.

6. The difference between positions taken in litigation and positions developed through the formal policy development process that EPA uses to issue regulations and announce authoritative EPA interpretations of statutory and regulatory provisions.

I can summarize my opinions and conclusions as follows:

- As its name implies, the New Source Review program is focused primarily on new sources and ensures that new power plants and other new industrial sources are designed and built with modern pollution controls. The NSR program is the most important Clean Air Act program for controlling emissions from new power plants.

- The NSR program also applies to existing power plants, but only if they undergo a major modification that will cause a significant increase in emissions. The NSR program was not designed to be a key program for reducing emissions from existing power plants.

- SO2 emissions are the only pollutant at issue in this case. SO2 emissions from existing plants like the Rush Island Plant are regulated under at least six Clean Air Act programs other than the NSR program. As a result of these programs, SO2 emissions at Rush Island have been reduced substantially since the current version of the Clean Air Act was adopted in 1990. Annual SO2 emissions (in tons per year) have fallen by about 56% since 1990. More importantly, the SO2 emissions rate (emissions per unit of electricity produced) has been reduced by about 68%.

- EPA has established the basic requirements for NSR programs in its federal regulations, but the Clean Air Act allows States to develop their own unique requirements and procedures to implement the federal NSR program as long as the state regulations meet the basic requirements established by EPA. If EPA approves a state NSR program, then the state's regulations displace EPA's regulations. Because Missouri has an EPA-approved program, the Missouri regulations apply in this case.

- Under Missouri's regulations, two steps are used to determine if a proposed replacement project will "trigger" NSR. A company that proposes to replace a component at an existing facility is required to obtain an NSR permit only if the replacement project (1) will cause an increase in *potential* emissions and is thus a "modification"; and (2) will cause a "significant" increase in *actual* emissions and is thus a "major modification."

- The methodology that Dr. Sahu uses to "project" future emissions is not a valid method for determining whether a project will cause an emission increase under NSR. It is used only in litigation and does not take into account the factors that must be considered under the applicable regulations. It is certainly not contemplated or required under the regulations.

- EPA routinely imposes detailed requirements for calculating emissions for purposes of determining compliance with regulatory requirements, but it chose not to do so under the NSR program. Instead, the NSR regulations give plant operators discretion in how to project future emissions as long as they consider certain factors set forth in the regulations.

- The rulemaking process ensures that official regulatory requirements and positions on regulatory issues are fully vetted and ultimately approved by experienced officials based on a variety of policy, legal, and practical considerations. Positions taken in litigation by non-governmental "experts" are not reviewed by any government officials except those bringing enforcement cases.

- The proponents of Dr. Sahu's method were deeply involved in developing the regulations at issue in this case. I now know that, while these regulations were being developed, they were arguing in court that Dr. Sahu's method must be used to determine whether an equipment replacement project would cause an emission increase. Yet they never proposed or even discussed this method during the regulatory development process even though they had ample opportunity to do so. I was responsible for developing the regulations at issue in this case, but I was not even aware of Dr. Sahu's method until after I left EPA and learned more about the NSR enforcement cases being brought against power companies.

## III. The Clean Air Act

The Clean Air Act was originally enacted in 1970, expanded in 1977, and substantially expanded in 1990. It is the most comprehensive and detailed environmental statute in the U.S., and I believe it to be the most comprehensive and detailed environmental law in the world. EPA implements many other environmental statutes but has issued more regulations under the CAA than under all the other statutes combined. Just since 1990, EPA has issued tens of thousands of pages of regulations and guidance documents to implement the various programs of the Act.

Under the CAA, EPA and states regulate virtually every imaginable source of air pollution, including both "stationary sources" (such as power plants, industrial facilities and dry-cleaning operations) and "mobile sources" (such as cars, trucks, buses, and construction equipment).

There are also CAA regulations that cover such things as leaf blowers, lawn mowers, paints and coatings, and consumer products such as hair spray and deodorant.

Although the reach of the Clean Air Act is very broad, Congress did not elevate clean air over all other concerns. It recognized that regulations can impose significant costs on businesses, consumers, and state and local governments, and it sought to strike a balance between the costs and benefits of most CAA regulatory programs. One of the purposes of the Act, as enshrined in the 1977 Amendments to the Act was "to allow reasonable economic growth to continue in an area while making reasonable further progress" in improving air quality. H. R. Rep. No. 95-294, p. 211 (1977)

For power plants and other stationary sources, the CAA created numerous regulatory programs designed to deal with different issues. For example, there are programs that require states to regulate facilities under their jurisdiction to ensure that all areas of the country meet national air quality standards for six different pollutants known as "criteria pollutants." There are other programs to regulate pollutants that are listed as "hazardous air pollutants." The 1990 Amendment created a separate new program to reduce emissions that contribute to "acid rain." In addition, there are other regulatory and permitting programs designed to improve and preserve visibility in national parks and wilderness areas.

As a result of this structure, an individual facility is usually regulated by multiple CAA programs, each with separate compliance requirements. Because power plants are a major source of air pollution, they are subject to many different programs – probably more than any other type of facility. Regulations are often "pollutant-specific," meaning that different programs are designed to deal with different types of pollutants. As discussed below, power plant emissions of sulfur dioxide (SO2) are regulated under at least seven different programs. Any individual power plant must comply with each of these programs.

A number of CAA programs are based on the principle of "cooperative federalism," under which EPA and individual states work together to control air pollution and improve air quality. Under these programs, EPA generally establishes standards or guidelines, and states are given the opportunity to meet those standards by developing their own regulatory or permitting programs. Once EPA reviews and approves these programs, they become part of the "state implementation plans" or SIPs that are a key feature of the CAA.

## IV. Clean Air Act Programs that Regulate $SO_2$ Emissions from Existing Power Plants

The major issues in this case are related to a Clean Air Act program known as New Source Review (NSR). As the name implies, the NSR program was designed primarily for "new sources" of emissions (new power plants and other industrial facilities). Before any new major source can be constructed, it must first go through a permitting process that identifies the best available control technology to minimize emissions from the new facility. It must then obtain an NSR permit that requires the plant to meet emissions limits that can be achieved with that technology. The basic theory of the program is that modern pollution controls should be part of the design and construction of any new major source of emissions. The NSR program is the most important CAA program for controlling pollution from new sources.

The NSR program also applies to existing sources, but only if they make "major modifications" as defined under EPA regulations. Again, the theory is that, when there will be a modification to an existing plant that will significantly increase emissions, modern pollution controls should be designed into the project. Although the NSR program is the primary regulatory tool for controlling emissions from new plants, it was *not* intended to be a key program for controlling emissions from existing power plants or other facilities. As EPA stated in a 2002 Report on the NSR program:

> The NSR program is by no means the primary regulatory tool to address air pollution from existing sources. The Clean Air Act provides for several other public health-driven and visibility-related control efforts: for example, the National Ambient Air Quality Standards Program implemented through enforceable State Implementation Plans, the NOX SIP Call, the Acid Rain Program, the Regional Haze Program, etc. Thus, while NSR was designed by Congress to focus particularly on sources that are newly constructed or that make major modifications, Congress provided numerous other tools for assuring that emissions from existing sources are adequately controlled. For example, the national cap on SO2 emissions established under the Acid Rain Program applies to all existing electricity generating units, without regard to the date of construction or whether a given source has been modified.

*New Source Review: Report to the President* (2002) at pp. 3-4, *available at* http://www.epa.gov/NSR/documents/nsr_report_to_president.pdf

Because this case involves SO2 emissions from the Rush Island Plant, I will briefly describe the Clean Air Act programs other than NSR that regulate SO2 emissions from this plant. There are at least six such programs. The Rush Island Plant, like most other coal-fired power plants, must comply with the regulatory requirements imposed by all these programs.

### A. The Acid Rain Program

The Acid Rain Program was the centerpiece of the 1990 Clean Air Act Amendments and was specifically designed to reduce $SO_2$ emissions from existing power plants. The Acid Rain Program was the first time a "cap-and-trade" system had been adopted to deal with an environmental issue. Under this system, each plant is given a certain number of "allowances" that declines over time. At the end of each year, plants are required to surrender one allowance for every ton of SO2 they emitted during the previous year.

The program was designed based on the understanding that it was not cost-effective to require emission controls to be installed on many existing power plants because of their size, physical constraints, and capacity factors. The cap-and-trade program created an economic incentive for all plants to look for the most cost-effective options for reducing their emissions. In many cases, it was possible for them to switch to lower-sulfur coal.

Through the cap-and-trade system, the cost of reducing SO2 is distributed equitably among all plants, regardless of whether they reduce their own emissions. Plants that install pollution controls have more allowances than they need to cover their own emissions, and they can sell

these allowances to other plants that are more difficult or costly to control and do not have enough allowances to cover their own emissions. In this way, plants that purchase allowances help to cover the cost of the controls installed on other plants. This program ensures that all existing plants share equitably in the cost of controls that are only installed on some of the plants – those that are most cost-effective to control.

The Acid Rain Program is viewed as perhaps the most successful program created under the Clean Air Act and has been used as the model for a number of other regulatory programs around the world. It has reduced emissions even more than predicted, and at a much lower cost. Overall, SO2 emissions from power plants have been reduced from almost 16 million tons a year in 1990 to just over 3 million tons per year by 2012, even though electricity generation from fossil fuels has increased from 2,103.6 billion kilowatthours in 1990 to 2,790.3 billion kilowatthours in 2011. *See* U.S. Energy Information Administration, Annual Energy Review (Sept. 27, 2012), *available at*, http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0802a. The other CAA programs discussed below are responsible for some of these reductions, but the Acid Rain Program is responsible for the largest share.

### B. National Ambient Air Quality Standards for $SO_2$

EPA has established "national ambient air quality standards" (NAAQS) for so-called "criteria pollutants," including $SO_2$. By law, EPA is required to set these standards at levels that will protect public health, including the health of sensitive individuals, with an adequate margin of safety. In setting these standards, EPA is not allowed to consider the cost that these standards will impose. (This is one of the few CAA programs in which EPA cannot consider costs when setting regulatory requirements.) EPA is also required to review all NAAQS every five years and to revise them as necessary based on new evidence regarding the health effects of the pollutant at issue.

There are now NAAQS for 6 different pollutants, including SO2. When EPA establishes or revises a NAAQS, each state must create a program to implement it, including such things as air quality monitoring programs and the establishment of emissions inventories for certain emission sources. Each state is required to measure air quality to determine whether there are areas within the state that do not meet the NAAQS. Any area that does not meet the NAAQS is designated as a "nonattainment area," and the state must develop regulations to bring that area "into attainment" by requiring sources of pollution to reduce their emissions. Areas that meet the NAAQS are designated as "attainment" areas, and states similarly establish regulations to "prevent significant deterioration of air quality" in those regions. Collectively, these regulations, along with other program elements, are then submitted to EPA as a "state implementation plan" or SIP for approval. Once approved, the state rules that are part of the SIP become federally enforceable.

The CAA mandates that EPA review each SIP (including each time a state seeks to revise or amend its SIP) to determine that the SIP as written and implemented will ensure compliance with the requirements of the CAA. If so, EPA formally approves the SIP through a notice-and-comment rulemaking. If EPA rejects a SIP, the State normally has an opportunity to correct any deficiencies identified by EPA. If the state does not do so within a specific period of time, then

EPA is required to develop a federal implementation plan (FIP) for the state to bring all areas into attainment.

During all times relevant to this lawsuit, the area around the Rush Island Plant met EPA's air quality standards for SO2 and was thus designated as an "attainment area" for SO2.

### C. National Ambient Air Quality Standards for Fine Particles

EPA has also established NAAQS for another pollutant known as PM2.5 (particulate matter smaller than 2.5 microns in diameter). These are sometimes referred as standards for fine particles. These standards were first established in 1997, but EPA made them more stringent in 2012 after reviewing more recent studies on the health effects of fine particles. These particles are formed primarily by photochemical reactions of other pollutants known as "precursors." In the eastern U.S., SO2 is the single most significant PM2.5 precursor, and EPA and states have adopted programs to further reduce SO2 emissions from power plants in order to meet the NAAQS for PM2.5.

The Rush Island Plant is located in an area that meets the national PM2.5 standards, which means that PM2.5 concentrations in the area do not pose a risk to human health or the environment.

### D. Cross-State impacts – CAIR, CSAPR, and Section 126

The third program regulating power plant $SO_2$ emissions relates to states' obligation to limit air emissions that contribute significantly to air quality problems in neighboring states. In 2005, EPA adopted a rule known as the Clean Air Interstate Rule (CAIR) to reduce cross-state emissions that affect ambient levels of PM2.5. 70 Fed. Reg. 25,162 (May 12, 2005). This rule created a new cap-and-trade system, significantly more stringent than the Acid Rain Program, to reduce power plant emissions of both $SO_2$ and nitrogen oxides (NOx) in the eastern U.S. by about 70 percent. On December 23, 2008, the D.C. Circuit ruled that EPA violated the CAA in adopting CAIR (*North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008)), but at the urging of EPA and all the other litigants, it left the rule in place until EPA could develop a rule to replace it. *North Carolina v. EPA*, 550 F.3d 1176, 1178 (D.C. Cir. 2008) (on rehearing).

In 2011, EPA finalized a new rule known as the Cross-State Air Pollution Rule (CSAPR) to replace CAIR. 76 Fed. Reg. 48,208 (Aug. 8, 2011). Before it came into effect, however, it was stayed by the D. C. Circuit, which later found CSAPR to be unlawful in several respects. In this case, the Court vacated CSAPR and ordered that CAIR continue to remain in place until EPA can develop a new rule that complies with the relevant CAA provisions relating to cross-state air pollution. *EPA v. EME Homer City Generation, L.P.,* 696 F. 3d 7, 37 (2012). On April 29, 2014, the Supreme Court overturned the D.C. Circuit decision and remanded the case back to the D.C. Circuit for further proceedings. *EPA v. EME Homer City Generation, L.P.*, Nos. 12-1182 and 12-1183. CSAPR is likely to be reinstated at some point, but additional process is necessary at the D.C. Circuit and likely EPA before CSAPR can be fully implemented. Until then, the Rush Island Plant must continue to comply with the SO2 control requirements set forth in CAIR.

Separate from EPA's general air transport program, states themselves have a potential remedy for cross-state emissions. Under CAA Section 126, states can individually petition EPA to regulate pollution from other states. No state has submitted a Section 126 petition to regulate emissions from power plants in Missouri.

### E. Regional Haze

The fourth program that regulates power plant SO2 emissions is the Regional Haze Program, which is designed to improve visibility in national parks and wilderness areas. Under this program, all states must develop and implement plans to reduce pollutants that have an impact on visibility. EPA has determined that SO2 emissions from power plants contribute to regional haze, and every state has been required to develop programs to reduce these emissions.

### F. Mercury and Air Toxics Standards

There is another recent EPA rule that will require additional reductions in SO2 emissions from power plants throughout the country. Although this rule is known as the Mercury and Air Toxics Standard (MATs), it also requires power plants to control their emissions of hydrogen chloride (HCl). 77 Fed. Reg. 9304 (Feb. 16, 2012); 78 Fed. Reg. 24073 (April 24, 2013). As EPA noted in its rule, control technologies designed to reduce HCl emissions will also reduce SO2. In fact, the Rule creates an "alternative compliance standard" that explicitly allows a plant to meet an SO2 limit in lieu of an HCl limit. The Rush Island Plant must come into compliance with MATs by April of 2015.

### G. Reduction in SO2 Emissions from the Rush Island Plant

These Clean Air Act programs have substantially reduced SO2 emissions from the Rush Island Plant since the Clean Air Act Amendments of 1990 were adopted. In 1990, SO2 emissions from Rush Island were 44,952 tons. In 2013, the most recent year for which annual emissions data are available, SO2 emissions from Rush Island were 19,587 tons. Thus, various CAA regulatory programs have already reduced annual SO2 emissions from the Rush Island Plant by a bit more than 56% since 1990.

The 56% reduction in total annual emissions actually understates the magnitude of the emissions reductions that have been achieved at Rush Island, because the Plant produced more electricity in 2012 than in 1990. Total power production at an individual power plant can vary significantly from year to year based on a number of factors, including total demand in the system, the addition of new generating units, increases in unit efficiency, and the temporary or permanent shut down of older plants in the system. Thus, it is often more relevant to look at a plant's emission rate (the emissions of SO2 per unit of electricity produced) rather than total emissions.

In 1990, the SO2 emissions rate at Rush Island was 1.62 lbs/mmBtu (pounds per million British Thermal Unit). By 2013, the rate had dropped to 0.53 lbs/mmBtu. This represents a 68% reduction in the SO2 emissions rate at the Plant since 1990.

Additional emission reductions may also be required because of the MATS rule, which has been promulgated but is not yet in effect.

## V. The NSR Program

As noted above, the NSR program also applies to existing power plants that are modified in a way that will significantly increase their SO2 emissions, as determined under the applicable regulations. There are actually two different parts of the NSR program: (1) the Nonattainment New Source Review (NNSR) program, which applies to plants located in nonattainment areas (*i.e.*, areas with air quality that does not meet the NAAQS); and (2) the Prevention of Significant Deterioration (PSD) program, which applies to plants located in attainment areas (*i.e.*, areas that meet the NAAQS). During the relevant time period, the area around the Rush Island Plant met the NAAQS for all pollutants, so it was subject only to the PSD program. As Dr. Sahu notes in his report, the main purpose of the PSD program is to ensure that new plants or major modifications at existing plants will not cause a "significant deterioration" of air quality in areas that meet EPA's air quality standards. Corrected Expert Report of Dr. Ranajit (Ron) Sahu, at 7-8 (Mar. 26, 2014).

Regulators and others who work on CAA issues often refer to both the PSD and the NNSR programs as the NSR program. I will adopt this custom and refer generally to the NSR Program and NSR requirements, even though the Rush Island Plant was subject only to the PSD requirements of the NSR program during the relevant time period.

The NSR program is referred to as a "construction" or "pre-construction" permitting program. If a company wants to build a facility that will be a "major source" of emissions as defined under the Clean Air Act, then that company must obtain an NSR permit before it can even begin construction on the facility. The same requirement applies to any company that wants to make a physical change to an existing plant that will significantly increase emissions – known as a "major modification" under EPA's NSR regulations. The company must go through the NSR permitting process and obtain a permit before it can begin construction on the major modification. From the time an NSR permit application is submitted, it normally takes 12 -18 months to obtain an NSR permit, although it can sometimes take much longer.

The actual permitting requirements vary somewhat, depending on whether the source needs a PSD permit or a NNSR permit, but in either case the main purpose of the permitting process is to ensure that the construction project will be built with modern pollution controls. The permitting authority determines the emissions rate that can be achieved with such controls and then issues a permit that requires the new plant to meet that rate.

### A. Delegated NSR Programs and SIP-Approved State NSR Programs

As noted above, the Clean Air Act establishes a comprehensive scheme to regulate air pollution based on a model of "cooperative federalism." Under many CAA programs, EPA issues standards or guidelines and then gives states the opportunity to develop their own programs to meet those standards or guidelines. This is the case with the NSR Program.

EPA has established the basic requirements for NSR programs (both NNSR and PSD) in its federal regulations. *See* 40 CFR Parts 51 and 52. States may develop their own unique requirements and procedures to implement the federal NSR program as long as the state regulations meet the basic requirements established by EPA.

Many states, including Missouri, have developed their own permitting programs to implement the NSR requirements of the CAA. In such cases, the state must create specific regulatory provisions and submit them to EPA for approval. EPA can approve or disapprove the program or tell the state that it must change certain aspects of its proposed program in order to obtain EPA approval. EPA generally takes a holistic approach when reviewing the adequacy of a state NSR program. It does not require that every aspect of the state program mirror the federal NSR rules but instead evaluates whether the program as a whole is sufficient to meet basic federal requirements.

When EPA approves a state NSR program, it goes through a rulemaking process (including public notice-and-comment) to formally adopt it as part of the state's SIP. For this reason, a state that has its own NSR program is said to have a "SIP-approved" NSR program. (In a few states – including California and Nevada – different counties within the state have their own SIPs and their own SIP-approved NSR programs, but, for ease of discussion, I will refer to any political subdivision that has its own SIP as a state.) In states that have SIP-approved NSR programs, the state's regulations apply.

EPA has made this point clear in a number of different situations. For example, when someone (a regulated entity or an environmental group or a regulator) asks EPA about an NSR issue in a state with a SIP-approved NSR program, EPA generally makes it clear that only the State can provide an authoritative response. EPA may provide guidance and technical assistant to SIP-approved States, but EPA is careful not to impose its own interpretation of a State program in specific cases. There are other numerous examples of EPA noting that the State ultimately decides NSR permitting questions if it has a SIP-approved NSR program. *See* Neleigh Letter, Oct. 4, 2006, *available at* http://www.epa.gov/region07/air/nsr/nsrmemos/entergy.pdf ("Our response provides guidance on this matter; however, it does not represent final Agency action. Instead, this guidance is intended to assist in the decision-making process that the State must go through in its role as the PSD permitting authority."); Neeley Letter, Aug. 8, 2001, *available at* http://www.epa.gov/region07/air/nsr/nsrmemos/ppg2001.pdf ("With respect to questions involving PSD, we have responded to your request based on how we believe such a request would be resolved under the federal PSD rules in Title 40 Code of Federal Regulations and under EPA policies. Our response does not represent how the North Carolina Division of Air Quality (NCDAQ) must interpret the PSD requirements that EPA has approved into the North Carolina state implementation plan, nor does it represent final agency action. Instead, this letter provides guidance for you to consider in your role as the PSD permitting authority.")

If EPA has approved a SIP and later "finds" that the SIP does not comply with the CAA or that the state is interpreting its SIP in a way that does not comply with EPA's regulations, then EPA is obligated to require the state to go back and revise its regulations. *See* 42 U.S.C. § 7410(k)(5) (Section 110(k)(5)). In such cases, EPA sometimes just works with the State informally to encourage the State to make regulatory changes that EPA believes are necessary and then submit those changes for EPA review. *See, e.g.,* "Approval and Promulgation of Implementation Plans; New Source Review; State of Nevada, Clark County Department of Air Quality Management," 69 Fed. Reg. 54006, 54012 (Sept. 7, 2004) (where EPA approved a new NSR applicability provision to replace a provision that EPA had previously approved but later found to be deficient).

However, Section 110(k)(5) of the CAA also gives EPA explicit authority to require a state to go back and revise an aspect of its existing SIP, even though EPA has previously approved it. This process is commonly referred to as a "SIP Call." EPA has used SIP Calls several times to require states to change their SIP-approved NSR programs, most recently in 2010, when it required 13 states to revise their NSR regulations to ensure that they covered greenhouse gas emissions. *See* 75 Fed. Reg. 77,698 (Dec. 13, 2010). If a state fails to revise its SIP to make the changes required under the SIP Call, then EPA can go through notice-and-comment rulemaking to issue a "federal implementation plan" (FIP) to take over the State's NSR program.

In such cases, however, state NSR regulations that have been approved as part of SIP-approved program continue to apply until EPA either approves a new SIP program or issues a FIP to replace the state's program. Even if EPA believes that certain provisions in a SIP-approved NSR program do not meet the requirements of the CAA, those provisions are legally binding and continue to apply as a matter of federal law until they are replaced by a FIP or a revised SIP that has been approved by EPA.

### B. Regulatory History – Determining Whether a Project at an Existing Plant Triggers NSR

Over the last 20 years, EPA has issued a number of rules to provide more certainty regarding the types of projects at existing sources that "trigger" the need for an NSR permit. These rules all deal with the question of "applicability" – how to determine if an NSR permit is needed for a particular project or activity at an existing plant.

The statutory language of the CAA simply says that an NSR permit is needed for "any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted." As EPA has noted, this definition essentially creates a two-step test that a plant operator must use in order to determine the applicability of NSR requirements to any particular project at an existing source: "first, you will determine whether a physical or operational change will occur. If so, then you will proceed to determine whether the physical or operational change will result in an emissions increase over baseline levels." 67 Fed. Reg. 80186, 80187 (Dec. 31, 2002).

EPA and states with SIP-approved NSR programs have adopted regulations to implement the basic two-step approach created by the CAA. As EPA has often noted, using essentially the same language in a number of Federal Register notices over the years:

> The reference to ''any physical change * * * or change in the method of operation'' in section 111(a)(4) of the Act could—read literally—encompass the most mundane activities at an industrial facility (even the repair or replacement of a single leaky pipe, or an insignificant change in the way that pipe is utilized). However, the EPA has recognized that Congress did not intend to make every activity at a source subject to major new source requirements . . . . As a result, the EPA has adopted several exclusions from the ''physical or operational change'' component of the definition. For instance, the EPA has specifically recognized that routine maintenance, repair and replacement, and changes in hours of operation or in the production rate are not by themselves considered a

> physical change or change in the method of operation within the definition of major modification. The EPA has likewise limited the reach of the second step of the statutory definition of modification by excluding all changes that do not result in an emissions increase above ''significance'' levels for the pollutant in question. Taken together, these regulatory limitations restrict the application of the NSR program . . . to only ''**major modifications**'' at existing major stationary sources.

61 Fed. Reg. 38,250, 38,253 (July 23, 1996) (internal citations omitted, emphasis added). Even so, the applicability of the NSR program to existing sources has been very controversial over the years and has resulted in a significant amount of litigation. This has been especially true for the application of NSR to existing power plants.

Prior to 1988, EPA and the power industry generally viewed all replacement of existing plant components with functionally equivalent components as "routine maintenance, repair and replacement" (RMRR) and thus not a physical or operational change. In September of that year, however, EPA staff evaluated the applicability of the NSR program to several projects to be undertaken at a Wisconsin Electric Power Company (WEPCO) power plant and determined that they were not RMRR. The staff also determined that the projects would cause an increase in emissions that would exceed EPA's "significance" levels and would thus be a "major modification" that would require an NSR permit. The Company appealed this "applicability determination" to the EPA Administrator (the head of EPA), arguing that it was simply replacing old components with functionally equivalent components, but he reaffirmed it in October 1988, noting that the projects were very extensive and could not be viewed as routine. As described by EPA, the projects that WEPCO had proposed for five different generating units at the plant were as follows:

> Each unit was rated at 80 megawatts of electrical output capacity. The activity involved the replacement of numerous major components. The information submitted by WEPCO showed that the company intended to replace several components that are essential to the operation of the Port Washington plant. In particular, WEPCO sought to replace the rear steam drums on the boilers at units 2, 3, 4, and 5. According to WEPCO, these steam drums were a type of ''header'' for the collection and distribution of steam and/or water within the boilers. WEPCO viewed their replacement as necessary to continue operation of the units in safe condition. In addition, at each of the emissions units, WEPCO planned to repair or replace several other integral components, including replacement of the air heaters at units 1, 2, 3, and 4. WEPCO also planned to renovate major mechanical and electrical auxiliary systems and common plant support facilities. WEPCO intended to perform the work over a 4-year period, utilizing successive 9-month outages at each unit. The cost of the activity was estimated in 1988 to be $87.5 million. . . . EPA concluded at the time this activity was unprecedented in that EPA did not find a single instance of renovation work at any electric utility generating station that approached this activity in nature, scope and extent.

68 Fed. Reg. 61,248, 61,256 – 61,257 (Oct. 27, 2003). In reaching the decision that the WEPCO projects went beyond RMRR, EPA "weigh[ed] the nature, extent, purpose, frequency, and cost of the work, as well as other relevant factors, to arrive at a common-sense finding" that the proposed projects would constitute a "physical change." The Administrator also agreed that this

physical change would result in a significant emissions increase, thus making it a "major modification" that would require an NSR permit.

The company appealed the Administrator's applicability determination to the 7th Circuit Court of Appeals. *WEPCO v. Reilly*, 893 F.2d 901 (7th Cir. 1990). The court upheld EPA's determination that the project proposed by WEPCO was not routine replacement (*i.e.*, was not RMRR). In reaching this conclusion, the Court largely relied on EPA's five-factor test (nature, extent, purpose, frequency, and cost), and EPA's analysis of how those factors applied in the WEPCO situation. *Id.* at 910-12. As discussed below, however, the Court disagreed with the method EPA had used to determine whether the project would cause an increase in emissions and remanded this issue back to the Agency.

The utility industry expressed concern that the WEPCO decision on RMRR might result in many component replacement projects, which they viewed as routine, being caught up in the NSR program. The WEPCO decision came out during the debate over the 1990 CAA Amendments, and a number of members of Congress raised these concerns as part of the debate. In response, the General Accountability Office (GAO) did a study which found that the WEPCO project was highly unusual and that most power plant replacement and repair projects would be less extensive. *See* Report from U.S. GAO, "Electrical Supply: Older Plants' Impact on Air Reliability and Air Quality," GAO/RCED-90-200, at 30-31 (September 1990), *available at* http://gao.gov/assets/150/149713.pdf. The Chairman of the House Energy and Commerce Committee (which was then working on the CAA Amendments) also sent a letter to EPA asking EPA to explain the scope of the WEPCO applicability determination and its implications for other power plants.
The then EPA Assistant Administrator for Air and Radiation, the senior EPA official in charge of implementing the CAA, responded to reassure the Chairman and other member of Congress that the WEPCO decision would not have a significant impact on other existing power plants:

> As indicated in the GAO report, it is expected that most utility projects will not be similar to the WEPCo situation. That is, EPA believes that most utilities conduct an ongoing maintenance program at existing plants which prevents deterioration of production capacity and utilization levels.

Letter from William Rosenberg, EPA Assistant Administrator, to Chairman John Dingell (June 19, 1991), at 5, Bates No. CIN30B6RM0150. He went on to state that "the ruling is not expected to significantly affect power plant life extension projects" and that "EPA's WEPCo decision only applies to utilities proposing 'WEPCo type' changes." *Id.* at 6.

### 1. ***WEPCO Rule***

EPA also issued a new rule in response to the WEPCO decision. Perhaps not surprisingly, this Rule is commonly known as the WEPCO Rule. 57 Fed. Reg. 32,314 (July 21, 1992). Although the 7th Circuit upheld EPA's determination that the project proposed by WEPCO was not RMRR (and was thus a physical change), it disagreed with EPA's approach for determining whether the project would result in a significant emissions increase (and thus be a "major modification" that required an NSR permit). As noted above, the utility industry also had concerns that the WEPCO approach might cause many equipment replacement projects, which they viewed as routine, to be

caught up in the NSR program. To address both these issues (as well as to adjust the NSR program to reflect the recently enacted 1990 CAA Amendments), EPA went through notice-and-comment rulemaking to change the way the federal NSR program would apply to existing power plants and to clarify its approach to RMRR. The final WEPCO Rule was issued in 1992.

On the issue of RMRR, EPA deferred promulgating a formal regulatory definition of RMRR under the WEPCO Rule. Instead, EPA noted that:

> [T]he issue has an important bearing on today's rule because a project that is determined to be routine is excluded by EPA regulations from the definition of major modification. For this reason, EPA plans to issue guidance on this subject as part of a NSR regulatory update package which EPA presently intends to propose by early summer. In the meantime, EPA is today clarifying that the determination of whether the repair or replacement of a particular item of equipment is "routine" under the NSR regulations, while made on a case-by-case basis, must be based on the evaluation of whether that type of equipment has been repaired or replaced by sources within the relevant industrial category.

57 Fed. Reg. at 32,326. Although EPA said it planned to issue more guidance on the issue of RMRR, such guidance was never issued. When I was the head of the EPA Air Office, we attempted to clarify the meaning of routine replacements through a rulemaking commonly known as the Equipment Replacement Rule. This Rule, however, was stayed before it went into effect and was later vacated by the D.C. Circuit. *See New York v. EPA*, 443 F.3d 880 (D.C. Cir. 2006). As I discuss in greater detail, below, the WEPCO Rule also changed the way companies and regulators were required to predict whether a project at an existing power plant (referred to under the WEPCO Rule as "electric utility steam generating units") would result in an emissions increase. For one thing, the WEPCO Rule explicitly reaffirmed EPA's view that a project would only trigger NSR if it "caused" an increase in emissions. Here is the way this issue was discussed in the Rule:

> The NSR regulatory provisions require that the physical or operational change "result in" an increase in actual emissions in order to consider that change to be a modification [see e.g., 40 CFR 52.21(2)(i)]. In other words, NSR will not apply unless EPA finds that there is a causal link between the proposed change and any post-change increase in emissions.
>
> * * * * *
>
> Consequently, where projected increased operations are in response to an independent factor, such as demand growth, which could have occurred and affected the unit's operations during the representative baseline period even in the absence of the physical or operational change, the increased operations cannot be said to result from the change and therefore may be excluded from the projection of the unit's future actual emissions.

57 Fed. Reg. at 32,326, 32327. Further, the WEPCO Rule changed the specified way in which post-project emissions were to be calculated at existing power plants. *See* 67 Fed. Reg. 80,186, 80,188 (Dec. 31, 2002). Before the WEPCO Rule, EPA took the position that post-project

emissions at existing power plants had to be based on the unit's maximum "potential-to-emit" after the change and that companies were therefore required to calculate future emissions based on the unit operating at full capacity, every hour of the day, 365 days a year. This is referred as the "actual-to-potential test." Under this test, essentially every project would be predicted to result in an emissions "increase" because no unit actually operates around the clock at 100% capacity for 365 days. Thus, as a practical matter, the only real issue was whether a power plant project would be RMRR. If not, it would always be a "major modification" under the actual-to-potential test.

In response to the Seventh Circuit's *WEPCO* decision, the WEPCO Rule set forth a new emissions test for existing power plants. Under the WEPCO rule, instead of determining post-project emissions based on a unit's potential-to-emit, the Rule provided that pre-project actual emissions (often referred to as "baseline emissions" or the "baseline") should be compared to the emissions that were actually expected to occur in the future, referred to under the rule as "representative actual annual emissions." 57 Fed. Reg. at 32,337.

I will not discuss this approach in any detail because Missouri never adopted the WEPCO Rule as part of its SIP-approved NSR program. Rather, Missouri incorporated a slightly different approach for projecting future emission that was adopted in 2002 as part of EPA's NSR Reform Rule, which I discuss immediately below.

**2. *NSR Reform Rule***

Even after the WEPCO Rule, virtually everyone involved in the NSR program – regulated entities, industry groups, and state and local officials – expressed concerns about the difficulty of implementing the program in a predictable and efficient way. Beginning in 1992, EPA worked with a number of stakeholders – industry and environmental groups and state and local officials – in an effort to develop a set of "reforms" to improve the NSR program. This effort resulted in two separate proposed rules – one in 1996 and one in 1998.

When I arrived at EPA in 2001, EPA had not finalized any of the changes proposed in 1996 and 1998, and one of my highest priorities was to follow through on several of the key NSR reform proposals. After considerable discussion with EPA staff and outside groups about the earlier proposals, I oversaw the development of a rule, known as the "NSR Reform Rule," that EPA promulgated in 2002. Under the NSR Reform Rule, we finalized several of the important reforms that were proposed in 1996 and 1998.

Perhaps the most important reforms involved extending the WEPCO Rule's actual-to-projected-actual "applicability" approach to industries other than power plants. Although the State of Missouri never officially incorporated the WEPCO Rule into its state rules or SIP, EPA approved Missouri's incorporation of the relevant sections of the 2002 NSR Reform Rule into the Missouri SIP in 2006. 71 Fed. Reg. 36,486 (June 27, 2006).

In the 2002 Rule that was incorporated into the Missouri SIP, we also clarified how projections of future actual emissions were to be made for purposes of determining whether a project would cause an emissions increase in the future. Rather than discussing them here, I will address them below when I discuss the shortcomings of Dr. Sahu's methodology for "projecting future

emissions." As I will discuss below, his methodology is improper under the applicable regulations.

## VI. Applicability – The Threshold Determinations

Under the NSR rules – and for that matter under all environmental regulations – a potentially regulated entity must first determine whether the rule actually *applies* to the source or activity at issue before identifying the substantive regulatory requirements that must be met (such as obtaining an NSR permit). This regulatory prerequisite is generally found in the "applicability" provisions of a rule.

When I was involved in drafting regulations at EPA, this was normally the initial focus of the regulatory development process – defining the universe of facilities or projects that would be covered by the substantive requirements of the regulation. In my experience, when a compliance official or lawyer for a potentially regulated entity is analyzing a regulation, he or she would normally start by looking at the applicability provisions to determine whether the substantive regulations apply to a particular facility, piece of equipment, or situation.

In some cases, it is possible to seek an official "applicability determination" from the relevant department or agency. Under the NSR program, for example, although not specifically provided for or required by rule, a company can send a description of a proposed project to the relevant agency (usually the state environmental agency or EPA) and ask for a determination of whether it would trigger NSR permitting requirements. However, EPA has made clear that a company is under no duty to seek an applicability determination from either EPA or a state permitting agency. In fact, EPA has noted that it is not feasible in many cases because of the time it may take to get an official applicability determination. 57 Fed. Reg. at 32,332. In some cases, EPA takes years to answer requests for NSR applicability determinations. Thus, under most regulatory programs, including NSR, a company must make its own applicability determination based on the language of the applicable regulations.

Generally, state and federal environmental regulations contain "applicability provisions" (or an applicability section) that serve as gateway for determining whether a particular facility or project is covered by the substantive requirements of the regulation. Applicability provisions often set forth a series of steps or screens. If a facility or project meets the conditions of the first step, it passes through the first screen and must be considered under the second step or screen. If not, it is "screened out' at Step 1 and there is no need to go on to the next step. As discussed below, this is how the applicability provisions of all NSR programs (federal and SIP-approved) work.

### A. Applicability Provisions in SIP-approved State NSR Programs

As noted above, individual states are given the opportunity to develop their own unique NSR programs. If EPA approves these programs as part of the State's SIP, then the State's regulations displace EPA's NSR regulations and apply to all facilities located within that state.

Over the years, individual states have developed their own NSR applicability provisions that are somewhat different from those in EPA's regulations, and these provisions have been incorporated into SIP-approved NSR programs. For example, from 1981 to 2004, the approved

Clark County, Nevada SIP included a "potential-to-potential" test for determining whether a project would be a modification for purposes of NSR. It defined a "modification" as "any physical change in or change in the method of operation of an existing stationary source w*hich increases or may increase the potential to emit for any air contaminant* by any emission unit in the stationary source . . . ." District Board of Health Clark County, Nevada, Air Pollution Control Regulations, Section 1.58 (emphasis added) (Revised 9/3/81). "Potential to emit" was defined as "the maximum capacity of a stationary source to emit a pollutant under its physical and operational design . . . ." *Id.* at Section 1.80.

In my experience, some regulators prefer this "potential-to-potential" approach because it is easy to determine whether a particular project will increase the capacity of the facility. If a project changes the physical characteristics of an emissions unit in a manner that would increase its size or capacity to emit, it is reasonable to assume that it would likely cause an emission increase and should go through further regulatory analysis. If a project does not increase the size or capacity of an existing unit, it is "screened out" and there is no need to do a projection of future emissions.

By the mid-1990s, EPA began to urge Clark County to eliminate the potential-to-potential test. In the meantime, EPA developed the NSR Reform Rule and promulgated changes to the emissions applicability test at the end of 2002. In 2004, Clark County submitted a new SIP that EPA found would "establish the more inclusive test ('actual to potential') for evaluating source modifications and thereby replace the existing SIP NSR program's 'potential-to-potential' test, with the result that a greater number of source modifications would be subject to new source review." 69 Fed. Reg. 31,056, 31,064 (June 2, 2004). However, the existing "potential-to-potential" applicability provision remained part of the SIP-approved program until September 2004, when the revised regulations were approved by EPA and incorporated into the Clark County SIP. 69 Fed. Reg. at 54018.

The State of Connecticut also had a similar but more complicated set of applicability provisions in its SIP-approved NSR program. Under 1989 Connecticut regulations, "modify" or "modification" means "any physical change in, change in the method of operation of, or addition to a stationary source which: (i) increases the potential emissions of any individual air pollutant from a stationary source by five (5) tons per year or more; or (ii) increases the maximum rated capacity of the stationary source unless the owner or operator of the stationary source demonstrates to the commissioner's satisfaction that such increase is less than fifteen percent (15%) and the change or addition does not cause an increase in the actual emissions or the potential emissions; or (iii) increases the potential emissions above [certain levels]." EPA approved these definitions into the State's SIP-approved NSR program in 1993. 58 Fed. Reg. 10,957, 10,963 (Feb. 23, 1993). As was the case in Nevada, EPA later urged the state to change its applicability provisions, and EPA ultimately approved a SIP that changed the State's definition of modification. As EPA explained in proposing to approve the new definition, Connecticut's "existing SIP-approved rules use a different approach for calculating the emission increase from a modification. Instead of the actual-to-potential test, the DEP uses the potential-to-potential test. This method compares the emission unit's potential before the modification with its potential after the modification. The DEP also does not allow sources the option to take credit for emission changes occurring source-wide. Adopting provisions that reflect the EPA rules that are currently in effect significantly improves Connecticut's program." 68 Fed. Reg.

2722, 2724 (Jan. 21, 2003). EPA approved the revised SIP shortly after its proposal. 68 Fed. Reg. 9009 (Feb. 27, 2003).

### B. Applicability Provisions in Missouri's SIP-approved NSR Program

As noted above, Missouri's SIP-approved NSR program, 10 CSR 10-6.060 and 10-6.061, contains the construction permit regulations that governed Rush Island during the relevant time period. Not all projects undertaken at a source like Rush Island are subject to permitting requirements. Missouri's construction permit rules serve to identify "sources which are required to obtain permits to construct" and "establish[] requirements to be met prior to construction or modification of any of these sources." 10 CSR 10-6.060 (Purpose) (June 27, 2006). The construction permit rules include applicability provisions to establish when sources are required to obtain permits to construct, including minor (referred to as "*de minimis*") permits, nonattainment NSR permits, PSD permits, and hazardous air pollutant permits.

The threshold applicability provisions for this permitting program are set forth under the heading, "Construction Permits Required – Applicability." Section (1)(C) of these regulations state that "[n]o owner or operator shall commence construction or *modification* of any installation subject to this rule . . . without first obtaining a permit from the permitting authority under this rule." 10 CSR 10-6.060(1)(C) (emphasis added). In other words, construction permits (whether *de minimis*, nonattainment, PSD or hazardous) are required only when there will be "construction" or "modification" of a facility covered by the rule. If the project or activity in question does not constitute "construction" or "modification," then the rules do not apply and the activity does not require any form of construction permit.

Under the Missouri SIP, a "modification" occurs only when the project will cause an increase in potential emissions. Similar to the Nevada program, the Missouri SIP defines "modification" as a physical or operational change of "a source operation" that causes an "*increase in potential emissions* of any air pollutant emitted by the source operation." 10 CSR 10-6.020(2)(M)(10)(emphasis added). "Source operation" is defined as "[a]ny part or activity of an installation that emits or has the potential to emit any regulated air pollutant or any pollutant listed under section 112(b) of the Act." 10-6.020(2)(E)4., (2)(S)16. The Missouri SIP defines potential emissions as "[t]he emission rates of any pollutant at maximum design capacity." 10 CSR 10-6.020(2)(P)19. Thus, a project is a modification only if it will cause an increase in the emission rate when the source is operating at its maximum design capacity. If not a modification, then the project is not subject to Missouri's construction permitting regulations, meaning that the source is not required to obtain a construction permit for the project before beginning construction or modification. Thus, the project is "screened out" at this point.

After this step, the Missouri NSR program is essentially the same as the EPA NSR program because the State, in 2006, incorporated the regulatory language from EPA's 2002 NSR Reform Rules into its SIP-approved program. Thus, if a project will cause an increase in potential emissions, the source must then determine whether it will be a "major modification" and thus subject to the PSD construction permitting requirements found under 10 CSR 10-6.060(8).

Determining whether an equipment replacement project is a "major modification" that triggers the need for an NSR permit involves a two-step process. At step one, the question is whether the

proposed project is "routine maintenance, repair, or replacement" or RMRR. If so, it is screened out at this step and does not trigger NSR. If it is not RMRR, then the company must determine whether the project will cause an increase in emissions that exceeds the "significance thresholds." For SO2, the significance threshold is 40 tons per year. In the next section, I discuss the question of how future actual emissions are to be projected when a projection is required.[1]

## VII. Applicability Step Two – Determining Whether a Physical Change Will Cause a Significant Emissions Increase

As noted above, if a project will increase potential emissions and is not RMRR, it is necessary to determine whether it will cause a significant increase in future emissions. The issue of how to project future emissions caused by project has been the subject of several rules and court cases. As noted above, prior to the 1992 WEPCO Rule, EPA took the position there was no need to project future *actual* emissions because post-project emissions were based on the unit's maximum potential to emit (except in states with SIP-approved programs that called for a different approach). Under this "actual-to-potential" test, future emissions were calculated by assuming that the unit, after the project, would operate at full capacity around the clock for a full year. After the 7th Circuit rejected this approach (*see* WEPCO, 893 F.2d at 916-17), EPA adopted the WEPCO Rule, which for the first time expressly required a projection of future actual emissions for power plants.

As directed by the Court, EPA changed the emissions test to require that regulators project future emissions by calculating "representative actual annual emissions," which would then be compared to past actual emissions. Under this approach, "representative actual annual emissions" were defined as follows:

> Representative actual annual emissions means the average rate, in tons per year, at which the source is projected to emit a pollutant for the 2-year period after a physical change or change in the method of operation of a unit, (or a different consecutive 2-year period within 10 years after that change, where the reviewing authority determines that such period is more representative of normal source operations), considering the effect any such change will have on increasing or decreasing the hourly emissions rate and on projected capacity utilization. *In projecting future emissions the reviewing authority shall*:
>
> > (A) Consider all relevant information, including but not limited to, historical operational data, the company's own representations, filings with the State or Federal regulatory authorities, and compliance plans under title IV of the Clean Air Act; and
> >
> > (B) exclude, in calculating any increase in emissions that results from the particular physical change or change in the method of operation at an electric utility steam generating unit, that portion of the unit's emissions

[1] I understand from counsel for Ameren that the Missouri SIP regulations applicable at the time of these outages did not require the Company to perform a numerical calculation to determine whether a major modification would be expected to occur. To the extent I describe what the regulations require, I am describing what the regulations require if such a numerical calculation is required to be made.

> following the change that could have been accommodated during the representative baseline period and is attributable to an increase in projected capacity utilization at the unit that is unrelated to the particular change, including any increased utilization due to the rate of electricity demand growth for the utility system as a whole.

57 Fed. Reg. at 32,334 (emphasis added).[2]

In the 2002 NSR Reform Rule, EPA extended the use of the "actual-to-projected-actual" test to all regulated sources (not just power plants) and also made several changes to the WEPCO procedures for projecting future emissions. The 2002 NSR Reform Rule requires that power plant operators, when performing an emissions calculation, compare pre-project actual annual emissions (based on the average annual emissions of the unit using any consecutive 24-month period out of the 5 years immediately preceding the project) to post-project "projected actual emissions" (based on the maximum annual rate projected to occur in any 12 month period in at least five years after the project), less that portion of emissions that "could have [been] accommodated" prior to the project that were unrelated to the project. *See* 67 Fed. Reg. at 80,276, 80,277. Specifically, the regulatory language in the 2002 Rule (and as incorporated in the Missouri SIP) provides as follows:

> *In determining the projected actual emissions* under paragraph (b)(41)(i) of this section (before beginning actual construction), *the owner or operator of the major stationary source*:
>
> (a) Shall consider all relevant information, including but not limited to, historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity, the company's filings with the State or Federal regulatory authorities, and compliance plans under the approved State Implementation Plan; and
>
> Shall include fugitive emissions to the extent quantifiable, and emissions associated with startups, shutdowns, and malfunctions; and
>
> (c) Shall exclude, in calculating any increase in emissions that results from the particular project, that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions under paragraph (b)(48) of this section and that are also unrelated to the particular project, including any increased utilization due to product demand growth;

*Id.* at 80,277; *see also* 40 CFR 52.21(b)(41)(ii); 10 CSR 10-6.060(8)(A) (emphasis added).

As noted above, the WEPCO Rule referred to the "reviewing authority" doing a projection of future emissions. The 2002 Rule recognized that the "owner or operator" of a plant would

[2] My discussion of the type of calculation that is "required" in the context of a numerical calculation of emissions assumes without analysis that such a numerical calculation is required by the applicable regulations in effect at the time of the project at issue. I do not render an opinion as to whether such a calculation was, in fact, required. I understand that issue is contested in this case.

usually need to make decisions about applicability without going to the reviewing authority and that *plant owners and operators had the primary responsibility for projecting future emissions based on the various factors set forth in the rule*. Thus, the 2002 Rule, which has been incorporated into the Missouri SIP (*see* 71 Fed. Reg. 36,486 (June 27, 2006)), intentionally gives plant owners and operators discretion in how they project future emissions

During the rulemaking process, some commenters expressed concern about giving plant operators the primary responsibility for projecting future emissions. The Rule addresses those concerns by requiring, in some cases, that sources track and report their emissions after the project, rather than requiring regulators to project future emissions or to review and approve projections made by plant operators. Thus, in responding to comments on this approach, EPA stated:

> We believe that the tracking requirements in the final rules alleviate many of the commenters' concerns about industry's alleged inability to predict their post-change actual emissions increases. Numerous industry commenters indicated that they believed adequate emissions predictions could be made. We agree that all sources are now in a better position to predict post-change emissions increases.

Technical Support Document (Response to Comments) for the Prevention of Significant Deterioration and Nonattainment Area New Source Review Regulations (Nov. 2002), at I-5-27, *available at* http://www.epa.gov/NSR/ttnnsr01/gen/nsr-tsd_11-22-02.pdf.

## VIII. Dr. Sahu's Approach For "Projecting" Future Emissions Is Improper and Not Consistent with the Applicable Regulations.

### A. Dr. Sahu's Methodology Is Used Only In Litigation and Was Concealed During the Regulatory Development Process.

In Dr. Sahu's report, he describes his approach for projecting future actual emissions caused by various projects performed at the Rush Island Plant. *See* Corrected Expert Report of Dr. Ranajit (Ron) Sahu (March 26, 2014). For the reasons discussed below, I believe that Dr. Sahu's approach is improper and should not be used to determine whether a project at any power plant will cause a significant emissions increase as defined under the applicable regulations. Among other things, it does not consider the wide range of factors required by the regulations.

Dr. Sahu's report demonstrates that there may be methodologies that could be used to predict an emissions increase as a result of the projects at issue in this case. *Id.* at Section V. But it is hard to see why this is relevant under the applicable regulations. As noted above, the Missouri SIP (incorporating the 2002 NSR Reform Rules) give the source owner or operator discretion in how it projects future emissions for purposes of determining NSR applicability, as long as it considers a number of factors set forth in the regulations. Of course this discretion is not unbounded. If challenged, the source owner or operator would have to show, based on the regulatory factors, that its approach for projecting future emissions was a reasonable one. But the mere fact that a different approach would predict an emissions increase is not relevant under the regulations.

Dr. Sahu proposes more than one method for predicting a significant emissions increase. His method [A] is simply the original "actual-to-potential" test, under which any power plant

maintenance project would result in a significant increase in emissions. (Indeed, to reach a conclusion of an emissions "increase" under this test, no project need be performed at all. Any time one compares past actual operation to the maximum potential operation of the unit, there will always be an "increase.") *Id.* at 15, 16. Dr. Sahu is correct in saying that this is an allowable option under the applicable regulations (which apply to all types of sources, not just power plants), but only if the plant owner or operator *elects* to use the actual-to-potential test. I am quite certain that no power plant owner or operator would choose to use this test – as Dr. Sahu does – to determine NSR applicability (except perhaps as a simplified way of setting an enforceable emission limit in a "synthetic minor" permit).

The regulations allow for this option because it is possible for other types of facilities to use the actual-to-potential test to show that a project will *not* cause a significant emissions increase. In this case, this approach offers two benefits to the facility owner: (1) it is very simple to calculate maximum potential to emit, so it allows the facility to avoid the need to project actual future emissions; and (2) if a facility uses the actual-to-potential test, it does not need to track future actual emissions. Again, however, no plant owner or operator would ever choose to use this approach, as Dr. Sahu does, to determine whether a project will trigger NSR permitting requirements.

Dr. Sahu's approaches [B] and [C] are based on GADs data, which provide information about unplanned outages. *Id.* at 15, 16-20. Although he discusses these approaches in several pages of his report, Dr. Sahu's approach boils down to this: If a piece of equipment or component was ever responsible or even partly responsible for an unplanned outage, and the facility replaces that component, the replacement would be predicted to cause a significant emissions increase if the unplanned outage occurred during the "baseline period" and lasted for more than 21 hours. I will refer to this approach below as the "Regained Hours Method".

Although the Regained Hours Method may not be as expansive as using "maximum potential emissions" as a surrogate for future emissions, it predicts that a broad range of common equipment replacement projects would cause a significant emissions increase. Thus, as was the case with the discredited "actual-to-potential" test, Dr. Sahu's approach means that the only real question when it comes to NSR applicability is whether a project is RMRR. If a project is RMRR, then it is not a major modification and doesn't trigger NSR. If not, then under Dr. Sahu's approach, it almost always does. Dr. Sahu has developed an approach whose primary feature is that it would cause a broad range of projects to trigger NSR. But again, the mere fact that there is such an approach is not relevant under the applicable regulations, which give plant owners and operators discretion in how they project future emissions, as long as they consider the factors set forth in the regulations.

As far as I know, no one in the power sector has ever used the Regained Hours Method to project future emissions in any permitting decisions or NSR applicability determinations or any other context. Someone may have used it as a simple NSR screen to show that a proposed project will not trigger NSR, but I do not believe that any company has used it, as Dr. Sahu does, to determine that a project will cause a significant increase in emissions and thus require an NSR permit.

While I am not familiar with every NSR permit issued by EPA and state permitting authorities, I am not aware that the Regained Hours Method has ever been used in the context of NSR permitting. Nor am I familiar with every NSR applicability determination made by EPA and state permitting authorities. Again, however, I am not aware that Dr. Sahu's Regained Hours Method has ever been used in any applicability determination. As far as I know, EPA has only used Dr. Sahu's method in the context of NSR enforcement actions.

To my knowledge, the proponents of Dr. Sahu's Regained Hours Method did not suggest that it be included in any NSR rulemakings, even though they have had ample opportunity to do so. When I was at EPA and we were developing the 2002 NSR Reform Rule, there were many discussions and meetings – both internal meetings and meetings with outside stakeholders – about the so-called "emissions test" (actual-to-potential vs. actual-to-actual) and how to determine whether a particular project would cause an emissions increase. Although I was involved in hundreds of hours of meetings and discussions about NSR Reform, I do not recall that anyone ever suggested anything like Sahu's Regained Hours Method. The use of GADs data in determining how an emission projection should be calculated was not part of the regulatory process. In fact, I was not aware of this method until after I left EPA and learned more about the NSR enforcement cases being brought against power companies.

I now know, however, that the EPA enforcement office was seeking to use the Sahu's Regained Hours Method in enforcement actions during the same time we were developing the 2002 NSR Reform Rule. Officials from EPA's enforcement office were deeply involved in the development of the 2002 Rule, yet none of them, to my knowledge, ever suggested that Sahu's Regained Hours Method should be included in the Rule as a way of determining whether a project would cause an increase in emissions for purposes of NSR applicability.

I am quite confident that the Regained Hours Method was never discussed in the 2002 NSR Reform Rule or in any of the EPA background documents that support the Rule. To the best of my recollection, it was never proposed in any of the comments that were submitted on the 1996 and 1998 reform proposals. I have not gone back and reviewed all the public comments, but I recently went back and reviewed EPA's summary of the public comments and the Agency's responses to those comments. Although there was much discussion about the actual-to-projected-future-actual test, I did not find anything in the rulemaking record regarding the Regained Hours Method or anything like it.

It is possible that EPA enforcement officials proposed this approach internally during the rulemaking process and it was rejected during staff level discussions and thus was never brought to my attention. If the approach was rejected during the internal rule development process, then I believe it is improper to use it in an NSR enforcement action.

It is clear, however, that EPA enforcement officials were promoting the use of the Regained Hours Method in enforcement cases at the same time the 2002 NSR Reform Rule was being developed. If it was a valid method for emissions analysis, it should have been presented as part of the significant rule development process going on at that very time and addressing these very issues. The public and all relevant stakeholders should have been given the opportunity to review it and comment publicly on it, so that this discussion could have been part of the considerable public discourse on this very issue. It was not.

Dr. Sahu's Regained Hours Method could easily be used to analyze virtually any equipment replacement project – at a power plant or any other type of facility that keeps records of unplanned outages. If it were the preferred method, it would have been reasonable to include it – either as a requirement or an option (like the actual-to-potential test) in the NSR Reform Rule. Again, however, I am not aware that anyone, either inside or outside of EPA ever suggested that it be mentioned in the NSR Reform Rule. In any event, the method is inconsistent with the rules as adopted and should be rejected on that grounds as well.

### B. EPA Routinely Imposes Very Detailed Requirements for Calculating Emissions But Chose Not To Do So Under the NSR Program.

In many CAA rules, EPA includes very detailed requirements regarding the precise methods that must be used to calculate emissions for purposes of demonstrating compliance with regulatory requirements. A quick review of the Code of Federal Regulations (CFR) reveals that there are hundreds of EPA regulations that set forth detailed requirements for calculating emissions. Below I provide just two examples, including one addressing the issue of how SO2 emissions should be calculated for purposes of determining compliance with an emission standard for new coal-fired power plants.

#### 1. New Source Performance Standards[3] – New Metal Coil Surface Coating Operations

EPA standards of performance for new metal coil surface coating operations are contained in 40 CFR § 60.463. The standards require 18 separate calculation methodologies "for determining monthly volume-weighted average emissions of VOC's [Volatile Organic Compounds] in kg/l of coating solids applied." 40 CFR § 60.463(c). The regulated entity first calculates "the mass of VOC's used (Mo+Md) during each calendar month for each affected facility by the following equation:

$$M_o + M_d = \sum_{i=1}^{n} L_{ai} D_a W_{oi} + \sum_{j=1}^{m} L_{dj} D_{dj} \qquad Equation\ 1$$

where "n is the number of different coatings used during the calendar month, and m is the number of different VOC solvents added to coatings used during the calendar month." 40 CFR § 60.463(c)(1)(i)(A).

Additional, similarly detailed calculations are used to calculate (2) the volume of coating solids used (§ 60.463(c)(1)(i)(B)), and (3) "the volume-weighted average mass of VOC's used per unit volume of coating solids applied during the calendar month for each affected facility." § 60.463(c)(1)(i)(C). Next, calculations are provided for (4) identifying the volume-weighted average of VOC emissions, (5) the fraction of total VOCs emitted by an affected facility that enters the control device, (6) the destruction efficiency of the control device, (7) the volume-weighted average of VOC emissions to the atmosphere, (8) the total mass of VOC's recovered,

[3] Not entirely dissimilar to EPA's NSR regulations, EPA's New Source Performance Standards or NSPS establish category-specific technology-based emission standards applicable to new, modified, and reconstruction stationary sources. *See generally,* 42 U.S.C. § 7411; 40 CFR Part 60.

(9) the overall reduction efficiency of the control device, (10) the total volume of coating solids applied without the control device in operation, (11) the total volume of coating solids applied with the control device in operation, (12) the mass of VOC's used without the control device in operation, (13) the volume-weighted average of the total mass of VOC's consumed per unit volume of coating solids applied without the control device in operation, (14) the mass of VOC's used with the control device in operation, (15) the volume-weighted average of the total mass of VOC's used per unit volume of coating solids applied with the control device in operation, (16) the volume-weighted average of VOC emissions to the atmosphere, and (17 and 18) the emission limit(s) for each calendar month, by using one of two alternate formulas. *See* § 60.463(c) (equations 4 through 17).

**2. New Source Performance Standards – New Coal-fired boilers and Industrial Boilers**

It is not just coating operations for which EPA includes detailed requirements for calculating emissions. EPA has also established requirements for calculating SO2 emissions from new coal-fired power plants and industrial boilers. For industrial boilers, the regulations in 40 CFR § 60.42b provide that "any owner or operator of an affected facility . . . that combusts coal or oil shall not cause to be discharged into the atmosphere any gases that contain SO2 in excess of 87 ng/J (0.20 lb/MMBtu) or 10 percent (0.10) of the potential SO2 emission rate (90 percent reduction) and the emission limit determined according to the following formula:

$$E_s = \frac{(K_a H_a + K_b H_b)}{(H_a + H_b)}$$

Where:

Es = SO2 emission limit, in ng/J or lb/MMBtu heat input;

Ka = 520 ng/J (or 1.2 lb/MMBtu);

Kb = 340 ng/J (or 0.80 lb/MMBtu);

Ha = Heat input from the combustion of coal, in J (MMBtu); and Hb = Heat input from the combustion of oil, in J (MMBtu)."

*See* 40 CFR § 60.42b(a).

As for new coal-fired power plants, the regulations provide that an "owner or operator may use the following equation to determine an F factor (dscm/J or dscf/MMBtu) on a dry basis (if it is desired to calculate F on a wet basis, consult the Administrator) or Fc factor (scm CO2/J, or scf CO2/MMBtu) on either basis in lieu of the F or Fc factors specified in paragraph (f)(4) of this section:

$$F = 10^{-6} \frac{[227.2\ (\%H) + 95.5\ (\%C) + 35.6\ (\%S) + 8.7\ (\%N) - 28.7\ (\%O)]}{GCV}$$

$$F_c = \frac{2.0 \times 10^{-3} (\%C)}{GCV\ (SI\ units)}$$

$$F = 10^{-6} \frac{[3.64\ (\%H) + 1.53\ (\%C) + 0.57\ (\%S) + 0.14\ (\%N) - 0.46\ (\%O)]}{GCV\ (English\ units)}$$

$$F_c = \frac{20.0\ (\%C)}{GCV\ (SI\ units)}$$

$$F_c = \frac{321 \times 10^{3}\ (\%C)}{GCV\ (English\ units)}$$

where

(i) %H, %C, %S, %N, and %O are content by weight of hydrogen, carbon, sulfur, nitrogen, and O2 (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired, using ASTM D3178 or D3176 (solid fuels), or computed from results using ASTM D1137, D1945, or D1946 (gaseous fuels) as applicable. (These five methods are incorporated by reference, see §60.17.)

(ii) GVC is the gross calorific value (kJ/kg, Btu/lb) of the fuel combusted determined by the ASTM test methods D2015 or D5865 for solid fuels and D1826 for gaseous fuels as applicable. (These three methods are incorporated by reference, see §60.17.)[; and]

(iii) For affected facilities which fire both fossil fuels and nonfossil fuels, the F or Fc value shall be subject to the Administrator's approval.

*See* 40 CFR § 60.45 (f)(5).

There are literally hundreds of other regulations that set forth required or allowable methods for calculating emissions for purposes of determining compliance with various CAA requirements. Given that the EPA enforcement office has for well over a decade promoted the use of Sahu's Regained Hours Method in its enforcement actions against coal-fired power plants, and given that EPA routinely promulgate rules with specific requirements regarding the calculation of emissions, the fact that Sahu's Regained Hours Method is not even mentioned in any of the NSR rulemakings undermines the validity and enforceability of Sahu's methodology.

## IX. Positions Taken In Litigation Should Be Given Little Weight Compared To Authoritative Positions Developed Through The Rulemaking Process.

The process of developing a new regulation or even a limited change to an existing regulation is long and cumbersome. However, by the end of the process, the public and regulated parties can be sure that the issues have been fully vetted by a number of experienced officials from within EPA and throughout the federal government who review the issues from a variety of legal and

policy perspectives. Thus, when the EPA Administrator signs a final rule, he or she is speaking in an authoritative way on behalf of EPA and, in fact, the whole executive branch.

When I first arrived at EPA as the head of the Air Office in 2001, I was sometimes frustrated by the process and the amount of time it took to develop a new regulation or even to make relatively limited changes to an existing regulation. Many different EPA offices are involved in the development of proposed and final CAA regulations, including, in all cases, the Office of General Counsel, the Policy Office, and the Enforcement Office. Depending on the issues involved, the internal EPA work group might also include representatives from the Water Office, the Office of Solid Waste, and the Office of Pesticides and Toxic Substances. Each of these offices is headed by an Assistant Secretary level official (usually known as an Assistant Administrator), most of whom are appointed by the President and confirmed by the Senate.

As issues arise during the regulatory development process, staff members from the various offices discuss them and attempt to reach agreement on recommendations or set of options for senior officials. If staffers cannot reach agreement, then the issues are elevated to more senior career officials for resolution. On some issues, senior career officials from the various offices are not able to reach agreement, and the issues are presented to the Assistant Administrator level officials from the offices involved. In the rare cases where those officials are unable to reach agreement, the issues are ultimately resolved by the head of the Agency, the Administrator of EPA.

Further, during the regulatory development process, the Air Office will often develop an options paper to get the Administrator's decisions on key issues. But in virtually all cases, the offices involved in the internal regulatory process have come to agreement on the options paper and the various factors that the Administrator should consider in choosing among the options.

The EPA Administrator signs virtually all proposed and final CAA regulations. But before he or she will sign even a proposed regulation, it must be approved by all the relevant EPA offices (except in those rare cases where the Administrator must resolve the differences between them).

For significant regulations, both proposed and final, there is also an interagency review process coordinated by the Office of Management and Budget (OMB), which circulates EPA regulations to other Departments and agencies for their review. When OMB or another Department or agency raises an issue about the regulation, it is usually resolved by senior career or political officials from EPA and the other Agency or Department. Ultimately, at the end of the interagency review process, the Administrator signs the regulations and they are issued in the Federal Register –as either proposed or final regulations.

When a regulation is proposed, it is published in the Federal Register and EPA provides a public comment period during which any interested person or entity can submit written comments on the proposal. For significant regulations, there is also at least one public hearing at which witnesses can present their views in oral statements. Before EPA can issue a regulation in final form, it must consider and respond to all the substantive public comments that have been submitted during the comment period or raised at a public hearing.

The process of developing or revising a rule is quite different from the process by which the Department of Justice (DOJ) takes positions in enforcement cases. In my experience, there is no internal agency discussion of the positions taken by "experts" such as Dr. Sahu. Certainly, there is not a process by which those positions are vetted internally and then presented to senior EPA officials for review. When DOJ submits a brief on behalf of EPA, it is reviewed by staff lawyers in EPA's Enforcement Office and only sometimes by attorneys in the Office of General Counsel. Officials from the relevant program office (such as the Air Office) can ask to review the briefs, but they have a very limited window of time in which to comment and very little opportunity to revise any of the positions taken in litigation. EPA regulations and authoritative interpretations of its regulations are issued by the Administrator or properly delegated senior officials, not by non-federal employees acting as expert witnesses in litigation.

For these reasons, I believe that much more weight should be placed on regulations than on litigation positions. Certainly, more weight should be placed on regulations and other regulatory documents that are the result of intra- and interagency deliberations than on positions taken by outside experts who are retained for the sole purpose of bringing enforcement actions.

# Exhibit A

The text (and footnotes) of the report and the citations therein generally refer to the documents I considered in the preparation of this report. Below is a list of other documents I considered in preparing this report:

- Deposition of Dr. Ranajit (Ron) Sahu (Feb. 7, 2014)
- Deposition of Robert Koppe (Feb. 26 and 27, 2014)
- Corrected Expert Report of Dr. Ranajit (Ron) Sahu, March 26, 2014
- Expert Report of Mr. Robert Koppe, December 20, 2013
- United States' Responses and Objections to Defendant Ameren Missouri's Sixth Set of Interrogatories
- Ameren Missouri's Responses and Objections to Plaintiff United States' Fourth Set of Interrogatories
- Letter from James L. Kavanaugh, MDNR to James B. Gulliford, EPA Region V (Feb. 28, 2006)
- The United States Clean Air Act
- The Preamble to the 1980 PSD Rules – 45 Fed. Reg. 52676 (Aug. 7, 1980)

# Exhibit B

# JEFFREY R. HOLMSTEAD

2000 K Street, NW, Suite 500 | Washington, D.C. 20006 | 202.828.5852 | jeff.holmstead@bgllp.com

## Professional Experience

**Bracewell & Giuliani LLP, Washington DC Office** *2006-Present*
*Partner and Head of the Environmental Strategies Group*

The Environmental Strategies Group (ESG) is a multi-disciplinary group that includes environmental and energy attorneys, public policy advocates, and strategic communications experts – most of whom have had high-level government experience. As head of the ESG, Mr. Holmstead represents companies, business groups, and not-for-profit organizations on a wide range of environmental and energy-related issues related to the Clean Air Act.

**United States Environmental Protection Agency** *2001-2005*
*Assistant Administrator for Air and Radiation*

Appointed by President George W. Bush and confirmed by the U.S. Senate to oversee all regulatory and permitting programs created under the Clean Air Act. During his tenure at EPA, Mr. Holmstead was the architect of several of the Agency's most important initiatives, including the Clean Air Interstate Rule, the Clean Air Diesel Rule, the Mercury Rule for power plants, and the reform of the New Source Review program. He also oversaw the development of the Bush Administration's Clear Skies Legislation and key parts of its Global Climate Change Initiative.

**Latham & Watkins, Washington DC Office** *1993-2001*
*Associate and then Partner*

As a member of the firm's Environmental Group, Mr. Holmstead represented a wide variety of companies and trade associations dealing with issues arising under several environmental statutes. Much of his work involved the Clean Air Act and, in particular, regulatory issues arising from the 1990 Amendments to the Clean Air Act.

**The White House** *1989-1993*
*Associate Counsel to President George H.W. Bush*

Served on the White House Staff as a member of the White House Counsel's Office. In this capacity, he was involved in discussions that led to passage of the Clean Air Act Amendments of 1990. After the Amendments were adopted, he was involved in the interagency review process for all major EPA rules arising under the Clean Air Act.

**Davis, Polk, and Wardwell LLP, Washington DC Office** *1988-1989*
*Associate*

Worked on securities offerings and advised companies on a range of regulatory issues.

**U.S. Court of Appeals for the District of Columbia Circuit** *1987-1988*
*Law Clerk to Judge Douglas H. Ginsburg*

**Education**

J.D., Yale Law School, 1987
B.A., summa cum laude, Brigham Young University, 1984

**Noteworthy**

- Chambers USA: America's Leading Lawyers for Business, Climate Change, 2010-2013; Environment, 2008-2013
- Best Lawyers in America, Environmental Law, 2008-2010 and 2013
- US Legal 500, Environment: Litigation, 2012

**Congressional Testimony**

U.S. House Committee on Science, Space, and Technology — June 12, 2013
Subcommittee on Environment
*Hearing entitled "Background Check: Achievability of New Ozone Standards"*

U.S. House Energy and Commerce Committee — June 28, 2012
Subcommittee on Energy and Power
*Hearing entitled "Implications of EPA's Proposed National Ambient Air Quality Standards (NAAQS) for Fine Particles (PM2.5)"*

U.S. Senate Committee on Environment & Public Works — April 17, 2012
Subcommittee on Clean Air and Nuclear Safety
*Hearing entitled "Review of Mercury Pollution's Impacts to Public Health and the Environment"*

U.S. House Judiciary Committee — May 4, 2011
Subcommittee on Courts, Commercial and Administrative Law
*Hearing entitled "Cost-Justifying Regulations: Protecting Jobs and the Economy by Presidential and Judicial Review of Costs and Benefits"*

U.S. House Select Committee on Energy Independence & Global Warming — Dec 11, 2008
*Hearing regarding the Administrative Procedure Act and "midnight" regulations*

U.S. House Committee on Energy Independence and Global Warming — June 26, 2008
*Hearing entitled "$4 Gasoline and Fuel Economy: Auto Industry at a Crossroads"*

U.S. Senate Committee on Environment and Public Works — Jan. 24, 2008
*Hearing entitled "Oversight of EPA's Decision to Deny California Waiver Request"*

U.S. House Committee on Energy and Commerce — May 26, 2005
Subcommittee on Energy and Air Quality
*Hearing on the President's Clear Skies Act, and the reduction of emissions of sulfur dioxide (SO2), nitrogen oxides (NOx) and mercury from power plants*

U.S. Senate Committee on Environment and Public Works — March 20, 2003
Subcommittee on Clean Air, Climate Change, and Nuclear Safety
*Hearing on alternative fuels and fuel additives*

U.S. House Committee on Energy and Commerce — March 2, 2005
Subcommittee on Energy and Air Quality
*Hearing entitled "Clean Air Act Transportation Conformity Provisions Contained in H.R.3, Transportation Equity Act: A Legacy for Users"*

U.S. House Committee on Health, Education, Labor, and Pensions — Sept. 3, 2002
Subcommittee on Public Health
*Hearings concerning proposed improvements to the New Source Review (NSR) program under the Clean Air Act*

U.S. Senate Committee on Environment and Public Works — July 30, 2002
*Hearing on the Congestion Mitigation and Air Quality Improvement program (CMAQ)*

U.S. Senate Committee on Environment and Public Works — July 16, 2002
U.S. Senate Committee on the Judiciary
*Joint hearing on New Source Review policy, regulations, and enforcement activities*

Senate Committee on Energy and Natural Resources — May 23, 2002
*Hearing concerning EPA's role in setting public health and environmental radiation protection standards for the proposed spent nuclear fuel and high-level radioactive waste repository at Yucca Mountain, Nevada*

U.S. House Committee on Energy and Commerce — May 1, 2002
Subcommittee on Energy and Air Quality
*Hearing entitled "Accomplishments of the Clean Air Act, as amended by the Clean Air Act Amendments of 1990"*

U.S. House Committee on Energy and Commerce — April 18, 2002
Subcommittee on Energy and Air Quality
*Hearing entitled "A Review of the President's Recommendation to Develop a Nuclear Waste Repository at Yucca Mountain, Nevada"*

U.S. Senate Committee on Environment and Public Works — Nov. 1, 2001
*Hearing on S. 556 on its impact on the environment and the economy and any improvements or amendments that should be made to the legislation*